



Agricultural Institute of Slovenia

European
Cooperative
Programme
for Plant
Genetic
Resources



ECP/GR

Leafy Vegetables WG: Current state of fulfilment of ECPGR objectives of Phase IX

**ECPGR Networking meeting
17 – 18 October 2017, Ljubljana, Slovenia**

Jelka ŠUŠTAR VOZLIČ

Leafy Vegetables WG

58 Working group members (31 countries):

- Genebank Curators (16)
- Crop Specialist (22)
- Information/Documentation (11)
- Plant breeders (12)
- Policy and law (8)
- Other expertise (1)

Chair:

Rob van Treuren (until 2015)

Jelka Šuštar Vozlič (since 2015)



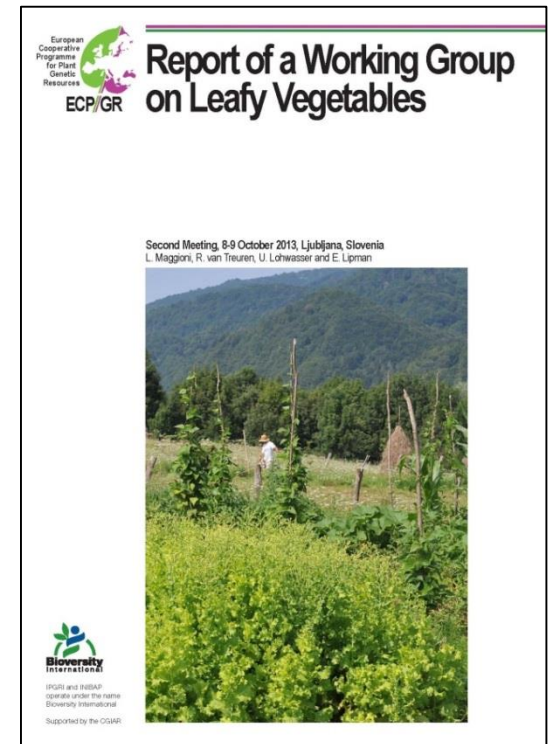
Second Meeting, 8-9 October 2013, Ljubljana

National reports (13 countries)

- Progress since 2009

Development of Workplan for the Phase IX:

- AEGIS:
 - selection and nomination of accessions for European Collection
 - Safety duplication
 - AQUAS (operational genebank standards, minimum crop specific standards)
- EURISCO:
 - representation of species
 - databases



AEGIS: European Collection of LV

Lactuca: 1357 (Germany-301, Nordic Countries-106, United Kingdom-119, Netherlands-831)

Cichorium: 114 (Nordic Countries-3, Germany-111)

Spinacia: 213 (Germany-52, Netherlands-117, Nordic Countries-28, United Kingdom-16)

Minor leafy vegetables

Asparagus: 7 (Nordic Countries-1, Germany-6)

Atriplex: 17 (Germany)

Chenopodium: 120 (Nordic Countries-1, Germany (119)

Cynara: 7 (Germany)

Diplotaxis: 7 (Germany)

Eruca: 67 (Germany-63, Netherlands- 4)

Erucastrum: 1 (Germany)

Glebionis: 19 (Germany)

Lepidium: 45 (Germany)

Portulaca: 4 (Netherlands-3, Germany-1)

Rheum: 6 (Germany)

Rumex: 13 Germany-11, Nordic Countries-2)

Tanacetum: 6 (Germany)

Tetragonia: 1 (Germany)

Valerianella: 30 (Germany-17, Netherlands-13)

(Status as of October 2017)

AEGIS: AQUAS

- **Crop-specific standards for orthodox seeds (lettuce, spinach, chicory) (March 2016)**

CROP-SPECIFIC GENEBAK STANDARDS FOR ORTHODOX SEEDS		
Agreed by the Leafy Vegetables Working Group		
March 2016		
Note: the "FAO Genebank standards for orthodox seeds" listed in the first column correspond to Chapter 4, pp. 17-63 in: FAO. 2014. Genebank Standards for Plant Genetic Resources for Food and Agriculture. Rev. ed. Rome. (www.fao.org/it-crcres/019/i3704e/i3704e.pdf)		
FAO Genebank standards for orthodox seeds	Crop-specific genebank standards for orthodox seeds – Leafy vegetables (lettuce, spinach, chicory)	Remarks (reasons for deviating from FAO standards)
4.1 Standards for acquisition of germplasm		
4.1.1 All seed samples added to the genebank collection have been acquired legally with relevant technical documentation.		
4.1.2 Seed collecting should be made as close as possible to the time of maturation and prior to natural seed dispersal, avoiding potential genetic contamination, to ensure maximum seed quality.		
4.1.3 To maximize seed quality, the period between seed collecting and transfer to a controlled drying environment should be within 2 to 5 days or as short as possible, bearing in mind that seeds should not be exposed to high temperatures and intense light and that some species may have immature seeds that require time after harvest to achieve embryo maturation.		
4.1.4 All seed samples should be accompanied by at least a minimum of associated data as detailed in the FAO/Biodiversity multi-crop passport descriptors.		
4.1.5 The minimum number of plants from which seeds should be collected is between 30-60 plants, depending on the breeding system of the target species	For chicory, it depends on the species: for <i>Cichorium endivia</i> accessions (mainly autogamous), seeds from a minimum of 15-20 plants and for <i>C. intybus</i> accessions (mainly allogamous) seeds from 40-60 plants should be harvested.	In case of conservation actions to rescue threatened populations of small size or collections of wild species the minimum number of plants from which seeds are collected could be lower.

- **Minimum descriptors for asparagus (*Asparagus* spp.) (April 2014)**
- **Minimum descriptors for leafy vegetables (Cultivated lettuce, wild *Lactuca* spp., spinach, leaf chicory, witloof, endive, root chicory) (January 2009)**
- **Minimum descriptor list for *Eruca*; Minimum descriptor list for *Valerianella* (developed within AGRI GEN RES project)**

Last update June 2017 (CCLEAFY project):

- 5732 accessions altogether
- 2859 accessions; removed:
 - with biostatus 400 and 500,
 - with no geographical data (still included are those with at least some geographic information),
 - all countries outside Europe (still included are the Mediterranean countries from Asia and North Africa).
- Safety duplication (lacking)

C&E data:

- *Lactuca*: 105,023 records
- *Spinacia*: 17,913 records
- *Eruca, Valerianella*

(data generated also within AGRI GEN RES Targeted Action: Leafy vegetables germplasm, stimulating use)



AGRI GEN RES Targeted Action

Leafy vegetables germplasm, stimulating use

contract number AGRI-2006-0262

project running time: 1/1/2007-31/12/2010
This site is not maintained anymore!



Action 001 AGRI GEN RES 870/2004 (Leafy Veg) receives financial support from the European Commission, Directorate-General for Agriculture and Rural Development, under Council Regulation (EC) No 870/2004.



<http://projects.cgn.wur.nl/leafyveg/>

• Key results achieved and outputs

WP1:

- **Result 1:** The International *Lactuca* Database (ILDB) was updated and new databases for spinach, chicory and minor leafy vegetables were developed. The passport data of 17,530 accessions from 129 collections were collected for the four databases combined.
- **Result 2:** Fifty-five data files generated within the frame of the project in workpackages 2 (Characterization), 3 (Evaluation) and 4 (Utilization) were linked to the databases in downloadable Excel format. The option was included in the on-line search tool of the databases to select only accessions with project data, and access to the Excel files was provided in the accession information screen of the search results.
- **Result 3:** An inventory of the status of safety duplication of leafy vegetables accessions was carried out among the project partners. Safety duplication arrangements were initiated by three project partners during the course of the project.
- **Result 4:** A gap analysis of each of the four leafy vegetables databases was carried out and priorities for acquisition were identified.

WP2:

- **Result 1:** In total 131% of all accessions involved in the project have been regenerated (111%) and/or characterized (152%) within the duration of the project.

WP3:

- **Result 1:** Both for pest/disease resistance evaluation and quality/abiotic evaluation, tests and evaluations realised by all the involved partners (P0, P1, P2, P4, P5, P7, P8, P9 and P10) permit to reach during the 2007-2010 period 117 % of the aim for lettuce (*i.e.* 110 accessions finally), 104 % for spinach (*i.e.* 332 accessions finally), 102 % for chicory (*i.e.* 271 accessions finally) and 114 % for minor crops (*i.e.* 57 accessions finally). Finally, 784 accessions for all these species have been evaluated *i.e.* 106 % of the initial aim.

WP4:

- **Result 1:** The target numbers for evaluation utilisation and marketing (WP4) were exceeded for all crops: for lettuce 44 accessions were evaluated (target 40), chicory and endive 136 accessions evaluated (target 125) minor crops 57 accessions evaluated (target 15). Furthermore all NGO partners involved in WP4 identified genebank accessions that had potential for development for their local markets.

The International Leafy Vegetables databases

Following up on activities within the ECPGR working group on leafy vegetables, this website was developed within the framework of the EU GENRES project entitled "[Leafy vegetables germplasm stimulating use](#)" (AGRI-2006-0262). The website provides access to the updated International *Lactuca* Database (ILDB) and to three newly developed databases containing information on accessions of spinach, chicory and minor leafy vegetables, respectively. Data were collected of accessions that in principal are available for distribution. It was aimed to cover all known European collections as much as possible and to include the main collections from outside Europe as well. EURISCO or the old ILDB was used as data source in case no current passport data were received upon request. The databases also provide access to characterization and evaluation data generated within the framework of the EU GENRES project.



Lettuce

This link provides access to the [International *Lactuca* database](#), which is maintained and hosted by the Centre for Genetic Resources, the Netherlands (CGN).



Spinach

This link provides access to the [International spinach database](#), which is maintained and hosted by the Centre for Genetic Resources, the Netherlands (CGN).



Chicory

This link provides access to the [International chicory database](#), which is maintained by the Groupe d'Etudes et de Contrôle des Variétés et des Semences (GEVES) and hosted by the Centre for Genetic Resources, the Netherlands (CGN).



Minor Leafy Vegetables

This link provides access to the [International minor leafy vegetables database](#), which is maintained by the Leibniz-Institute of Plant Genetics and Crop Plant Research (IPK) and hosted by the Centre for Genetic Resources, the Netherlands (CGN).

<http://ecpgr.cgn.wur.nl/LVintro/>

The screenshot shows the 'PGR Lettuce' website. At the top, there is a navigation menu with 'PGR material', 'Traits', 'Other info', and 'About'. Below the menu is a large banner image of lettuce leaves. A welcome message reads: 'Welcome to the lettuce crop portal that aims to guide you to the relevant information regarding the plant genetic resources of lettuce.' Below the banner, there are two main sections: 'Material' and 'Traits'. The 'Material' section has a 'Read more' button and a description: 'Providing information on genetic resources collections and commercial breeding, and intending to help you finding material of your interest.' The 'Traits' section also has a 'Read more' button and a description: 'Guiding you to germplasm using trait data as a starting point.' On the right side, there is a vertical list of links: 'More lettuce information', 'Other info', 'About', 'General information', 'Finding Vegetable PGR', and 'Requesting PGR'.

<http://www.pgrportal.nl/en/Lettuce-genetic-resources-Portal.htm>

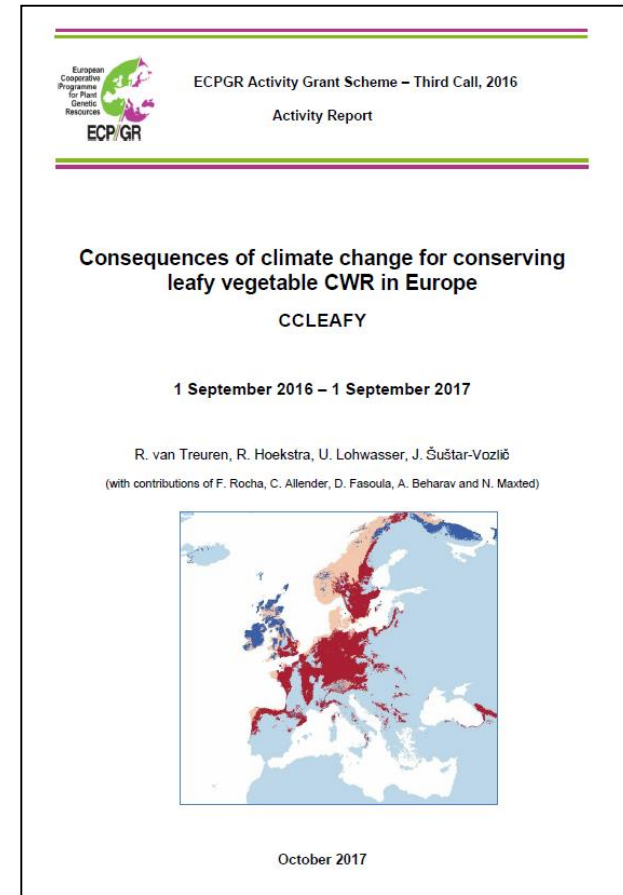
ECPGR Activity Grant Scheme: CCLEAFY (2016-2017)

Aim of the activity:

- to assess threat levels for the main leafy vegetable CWR occurring in the European region and to provide recommendations for their conservation.

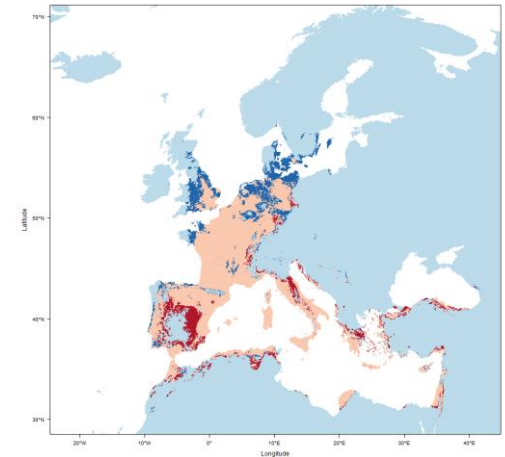
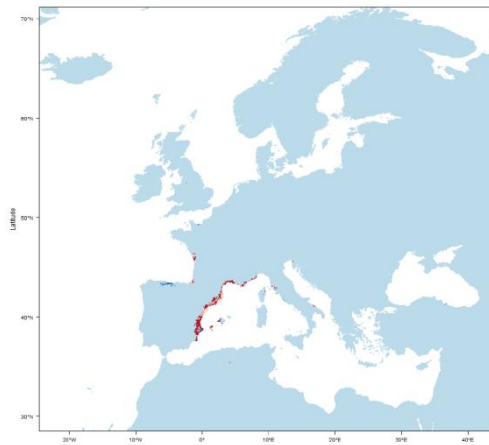
An inventory was made of the gene pools of 19 leafy vegetable crops, from which nearly **30 CWR that have their main distribution in the European region were selected for further analysis.**

None of the examined CWR are considered threatened in Europe by the IUCN Red List, but climate change is expected to reduce the future distribution of the majority of these species in the European region.



ECPGR Activity Grant Scheme: CCLEAFY (2016-2017)

- Since climate change is expected to shift the distribution range of many species northwards, the expected effects of *in situ* conservation on the survival of species in southern regions need to be examined on a case-by-case basis.
- Climate change will increase the **importance of north-western Europe as *in situ* conservation area** because of its refuge function for migrating species.
- **A high conservation priority should be given to species that have their main distribution in the southern part of the European region and that are not expected to migrate northwards, such as nearly all **artichoke CWR and *Asparagus maritimus***.**



ECPGR Activity Grant Scheme: CCLEAFY (2016-2017)

- The examined CWR are **not actively conserved *in situ*** and, with the exception of *Lactuca serriola*, are **poorly conserved *ex situ***.
- Therefore, it was recommended **to increase the number of accessions with MLS and AEGIS status to ensure both accessibility and proper conservation of samples**. This will necessarily also involve more representative *ex situ* collections throughout the species range.

CWR	EURISCO			IUCN status
	Total	MLS	AEGIS	
<i>Cynara algarbiensis</i>	0	0	0	Not yet assessed
<i>Cynara baetica</i>	0	0	0	Not yet assessed
<i>Cichorium pumilum</i>	0	0	0	Least concern
<i>Cichorium spinosum</i>	0	0	0	Data deficient
<i>Rumex acetosa</i> ssp. <i>hibernicus</i>	0	0	0	Not yet assessed
<i>Asparagus maritimus</i>	1	0	0	Data deficient
<i>Cynara toumefortii</i>	1	0	0	Not yet assessed
<i>Cynara humilis</i>	2	0	2	Not yet assessed
<i>Lepidium spinosum</i>	2	0	0	Data deficient
<i>Asparagus prostratus</i>	4	4	0	Not yet assessed
<i>Asparagus tenuifolius</i>	4	3	0	Least concern
<i>Chenopodium bonus-henricus</i>	9	0	1	Not yet assessed
<i>Asparagus aphyllus</i>	10	2	0	Least concern
<i>Valerianella locusta</i>	13	0	0	Not yet assessed
<i>Diplotaxis muralis</i>	19	3	2	Least concern
<i>Diplotaxis tenuifolia</i>	19	9	2	Least concern
<i>Glebionis coronaria</i> / <i>Chrysanthemum coronarium</i>	24	0	0	Not yet assessed
<i>Portulaca oleracea</i>	31	0	1	Not yet assessed
<i>Taraxacum officinale</i>	42	0	0	Least concern
<i>Asparagus officinalis</i>	84	32	1	Least concern
<i>Atriplex hortensis</i>	106	6	2	Not yet assessed
<i>Lactuca saligna</i>	123	24	29	Least concern
<i>Brassica nigra</i>	136	50	0	Least concern
<i>Cynara cardunculus</i>	136	0	3	Least concern
<i>Rumex acetosa</i>	139	1	0	Not yet assessed
<i>Eruca vesicaria</i> / <i>Eruca sativa</i>	220	47	13	Least concern
<i>Cichorium intybus</i>	281	4	69	Least concern
<i>Lactuca serriola</i>	1017	256	252	Least concern
Total	2423	441	377	

Gaps / Recommendations..

Very limited response from WG members:

- request for face to face meetings

Establishment of good cooperation between WG members, WG chairs, ExCo, SC and Secretariat to enable synergistic implementation of ECPGR objectives.

Thank you for your attention!

